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INTROSPECTION IN DEMENTIA PRECOX

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Introspection is generally acknowledged to be, if not the most important, at least one of the fundamental methods of psychology. The psychopathologist, however, in his study of the abnormal mind, has availed himself very little of the introspective method; and, in those cases in which he has done so, his use of the method has been so nearly unconscious and so correspondingly uncritical, that the results have been of very much less psychological value than those results which a refined application might have given. It is true that the psychiatrist depends largely, in a mental diagnosis, upon the verbal statement of the subject about his experiences; and the psychopathologist in a mental test, such as a comparison of lifted weights, also depends upon the verbal statement of the subject as an expression of mental facts; but such statements cannot be called 'introspection' in the proper sense of the word. They indicate facts about mind, but they do not, as a rule, directly describe mind. The material is information¹ and it is usually information uncritically accepted. As such it may prove adequate for a symptomatology, but it can hardly in itself lead to an accurate psychology.

The use of introspection in a study of association in the insane has been championed by Ley and Menzerath,² who write:

¹ The term, 'information,' is used throughout this paper in the meaning of *Kundgabe*, i.e., statements about mind, but not directly describing mind.

² *L'Étude expérimentale de l'association des idées dans les maladies mentales*, 1911, 32.

Les premiers auteurs qui s'occupèrent de l'étude expérimentale des associations ont cru pouvoir s'en tenir en côté purement objectif; ils comparant tout simplement les réactions aux mots inducteurs et en recherchaient les liens logiques..... Ces interprétations *logiques* devaient nécessairement aboutir à un échec, puisqu'elles négligeaient le côté le plus fondamental du phénomène, c'est-à-dire, le côté *subjectif, psychologique*. C'est à Alfred Binet que revient l'honneur d'avoir réhabilité le facteur subjectif en psychologie expérimentale, en y introduisant l'*introspection*.....

Nous avons personnellement constaté, et nos protocoles donnent de nombreux exemples à ce sujet, que bon nombre d'associations resteraient tout à fait inexplicables, si nous n'avions, pour éclairer leur genèse, l'introspection du sujet.

These writers report experiments performed with nine classes of insanity,³ in all of which they obtained introspections from the subjects. The introspections consist, however, of the statement of the meaning of the reaction word, of its connection with the stimulus word, or of some such simple explanation. At best the investigators have done no more than to substitute a logical interpretation by the subject for a logical interpretation by the experimenter. They have made no attempt to induce the subject to describe consciousness. He merely indicates meanings, and in doing so he is not introspecting (if we limit the use of the term introspection to a direct description of the contents of consciousness) but giving information.

Franz has recognized the availability of the introspective method in psychological work with the insane. In speaking of the difficulty of this sort of work, he writes:

The question has often been asked me whether or not the insane are more difficult to work with than normal people. I believe both to be equally easy and equally difficult subjects. Many insane do not introspect well, but few normal people do so. Some insane are more introspective than the average normal individual,—and from some no introspections can be obtained. It is not necessary to work with the patients who introspect badly or not at all; there is a possibility of a selection of subjects just as there is in normal psychological work. In general I think there is no inherent difficulty in investigating the mental conditions of the insane.⁴

The trend of psychopathology does not seem, however, to have led toward an employment of the introspective method. The writer is not aware of any paper, other than the one mentioned, in which introspections have been systematically

³ (1) Dementia precox, (2) manic-depressive psychoses, (3) toxic excitement, (4) neurasthenia and psychasthenia, (5) hysteria, (6) nerve traumatism, (7) paranoia, (8) general paralysis, and (9) sleeping sickness.

⁴ *Psychological Opportunity in Psychiatry, Jour. Philos. Psych. and Sci. Meth.*, 3, 1906. 567.

recorded. This state of affairs is probably due to a lack of trust, on the part of the investigator, in the reliability of the statements of the insane; and such scepticism is not unwarranted. In introspective studies with normal subjects, we are inclined to conjure with the term "trained observer," until the novice in the science might infer that all psychological facts are based on the experience of a few, specially educated individuals; yet even with the best observers the reliability of the method has been questioned,⁵ and recent studies have sought more clearly to define the nature of introspection and more exactly to determine its limitations.⁶ It is no wonder, when the validity of the report of a normal observer with psychological knowledge and perhaps years of introspective training is questioned, that there is little thought of applying the method to untrained observers of abnormal mentality. There is, however, an error in the sceptical position, an error which is both logical and empirical. The fact that reports of complex experiences by trained persons may sometimes be unreliable does not mean that the reports of simple experiences by untrained persons may not be reliable; and no rule is completely established until it is found operative in experience. Accordingly, it is proposed in this paper to examine critically the actual introspective reports made by subjects in one form of insanity,—dementia precox,—and to determine, as far as possible, the reliability of these reports.

The introspections which will be considered are those given for the course of consciousness during the learning of a pencil-maze by eight subjects with dementia precox. The writer has already published the protocols in a recent study,⁷ where they are printed fully in order that the reader may determine for himself what degree of reliability he will accord them. The writer was unable at the time of that publication to discuss the introspections critically, but promised that such a discussion should be forthcoming, as soon as additional experimental

⁵ Cf., Dodge, R., *The Theory and Limitations of Introspection*, *Am. Jour. Psych.*, 23, 1912, 214 ff.

⁶ Anschütz, G., *Ueber die Methoden der Psychologie*, *Arch. f. d. ges. Psych.*, 20, 1911, 414 ff.

⁷ Titchener, E. B., *Prolegomena to a Study of Introspection*, *Am. Jour. Psych.*, 23, 1912, 427 ff.; *The Schema of Introspection*, *ibid.*, 485 ff.

⁸ *Learning in Dementia precox*, *Psych. Rev. Monog. Series*, Vol. 15, No. 2, 1913. After this article was in the hands of the printers, it was found that an unavoidable delay in the publishing of the monograph would necessitate the appearance of this supplementary paper earlier than the appearance of the study upon which it is based. The latter should, however, be available shortly.

work in the way of control series had been performed. The present paper aims to fulfill that promise.

THE CRITERIA OF RELIABILITY

We must here inquire what the criteria of the reliability of a description of consciousness are. We must establish our critical method before we can proceed to the criticism.

In the first place, we may assume that the object of a descriptive psychology is to establish definite, permanent, concise descriptions of consciousness,—the facts of psychology,—which may be based upon the verbal introspective reports of trained observers, upon information of untrained observers, upon experimental graphic records, or upon casual observation, either introspective or informational,—as given verbally by a present observer, as recorded in literature, or as indicated by such products of mind as art, language, and customs. We shall concern ourselves here with such descriptions as are based upon verbal reports of observers,—thus including trained introspection and information, between which it is not easy, at present, to draw a sharp line of demarcation.

The availability of these bases for a description of consciousness depends upon the ease and reliability with which they can be interpreted accurately as describing consciousness. Even in the case of introspection by the trained observer, which is in itself a direct description of consciousness, a certain amount of interpretation must take place; for, in order that the introspection may become a part of a systematic, descriptive psychology, the psychologist must select from the protocols, and bring the verbal expression of the observer into accord with the terminology of the science. A description, then, as a unit of a systematic psychology, is always liable to error arising from a misinterpretation of the meaning of the observer, as expressed in his report.

A more frequent source of error arises from the fact that the report of an observer, in the meaning intended by him, may still not describe the actual experience exactly as it occurred. Even observers with the best training may report factors that were not actually present in the experience, and it is one of the commonplaces of the psychological laboratory that no report ever enumerates all of the factors present in the consciousness described.

In accordance with these two possible sources of error,—the intelligibility and the accuracy of the report,—we shall divide our method of criticism. The rubrics which we shall name may not be logically exhaustive. They emphasize, however,

those factors which are important as affecting reports by untrained observers; and in such form they should be approximately exhaustive in fact for the cases considered,—at least as far as can be determined at present.

1. Intelligibility of Report

The adequacy of a verbal report as an accurate description of the consciousness described depends upon the intelligibility of the report. The psychologist must interpret the language of the observer, and only to such extent as he attaches to the language of the report the meaning that was intended by the observer will the final conclusion represent the facts. We may distinguish three modes of interpretation.

1. *Empathic interpretation.*—An empathic understanding is perhaps always involved in the rapid comprehension of language. Bühler has insisted upon its importance in the interpretation of the introspections of trained observers, and it can not be denied that an experimenter can the better understand the language of an observer the better he is acquainted with him. Empathy is most important in the interpretation of the information of untrained observers. To just what extent an empathic translation of information into psychological terminology is reliable, it is not easy to say. Within certain limits, however, it seems safe to place dependence upon it. In psychology we find some grossly descriptive terms, which have been introduced into the science in order to classify certain sorts of very common experiences, and other more refined terms, which have come into use only as the result of the analyses of the laboratory. "Kinesthesia," for example, is a general term for "feelings of movement," a class of experiences separately distinguished by all individuals; the division of kinesthesia into muscular, articular, and tendinous sensations is a purely introspective difference that is not made in everyday life. There is little doubt that the experimenter may safely restate, empathically, in gross descriptive terms, what comes to him as information; for, if the observer reports, "I felt my hand moving," it is obvious that he means "arm or hand kinesthesia," or if he reports, "I see it plainly before me in my mind," it is obvious that he means "visual imagery;" but it is not possible, with safety, to press the classification to the application of those terms which are descriptive of experiences not ordinarily recognized as distinct. One can not say precisely what sensations composed the "arm kinesthesia," nor record the tint and chroma of the visual imagery. Empathic interpretation is, therefore, trustworthy

only when it substitutes for implications of consciousness such gross descriptive terms as were introduced by psychologists in order to designate the kind of consciousness implied.

2. *Interpretation by reference to a standard consciousness.*—When the typical consciousness for certain conditions is known, it may be used as a standard consciousness, in terms of which information, given under the same conditions, may be interpreted. Factors appearing in the same general manner both in the informational statements and in this standard average of introspections may with reasonable assurance be identified. It might appear, at first, as if the mere identification of certain factors of the informational statements with the corresponding factors of the standard consciousness could result in no additional knowledge beyond that already contained in the standard,—the method being thus reliable, but useless. Such a conclusion, however, is not correct; for, once the implication of the verbal expression is established by reference to the standard, the variations from the standard of the individual consciousnesses implied by the information can be roughly determined. If, for example, in the course of a consciousness in which strong visceral sensations ordinarily appear, the observer reports, “I feel sort of stretched inside,” the psychologist is justified in interpreting this same phrase in other connections to signify visceral sensations.

3. *Interpretations of a standardized terminology.*—If the observer always reports in the terms of a standard psychological vocabulary, the danger of misinterpretation is reduced to a minimum, provided always that the terms are rigidly defined and that the observer is trained to understand the meaning of his terms as thoroughly as do his interpreters. Even under these conditions, however, an accurate conclusion is not always as easy as it appears. What we actually mean in psychology by the definition of a descriptive term is that we select some definite set of conditions and state that the experience or a certain part of the experience occurring under those conditions shall be characterized by the term in question. The selection may or may not be conscious; the conditions may or may not be experimental. We may say that we shall call the “sensation of cold” the characteristic experience that we have upon first touching ice, and we shall have adequately defined the term. If we say, on the other hand, that the feeling which we get from our joints shall be called “articular pressure,” we have not sufficiently defined the quality, for we refer various sensations to the joints. We may, however, in this case state

the conditions of Goldscheider's experiment with the string and weight, and thus rigidly fix the term. The experience with the ice is common enough; that with the string and weight ordinarily needs to be reproduced in the laboratory. Both experiences may, at first, be consciously referred to as standards; the reference, however, soon becomes unconscious. It is exactly in terms of these simple standard experiences that the trained observer actually reports. His criteria of judgment may have been established in childhood, in more recent casual experience, in a psychological laboratory course, or later in the laboratory; but, unless the criteria are known, the interpretation of his reports is liable to error. Too often the supposedly trained observer remains untrained in the meaning of some particular term which he uses. We say that he "lacks introspective familiarity" with the particular processes concerned; yet it is not that the processes are unfamiliar, but rather that he has not been furnished with the criteria necessary for a classification of these processes in accordance with a psychological terminology.

On the one hand, then, the trained observer is liable to be misinterpreted in some point for which his criterion of classification is not the same as that of his interpreter; on the other hand, however, the observer, who is in general untrained, may easily be trained to report upon such distinctions if he is familiarized with standard experiences in terms of which he is later to report. Many a trained observer, so called, fails to distinguish between the experiences of warmth and heat; yet an observer, otherwise untrained, if given the two experiences with the names attached, readily learns to make the distinction. It is not safe, then, in interpreting a report to assume that, because most of the terms are unequivocal, therefore all must be; or that, because most of the statements are informational, therefore no real introspection can be expected.

The normal procedure in obtaining a description of a given consciousness may be taken to be that which we have just indicated: the observer is furnished with terminological criteria; he is then made clearly conscious of the experience to be described; he then describes the experience by reference (conscious or unconscious) to the criteria furnished. The order may, however, be reversed. After the observer has experienced and reported by reference to whatever criteria he is accustomed to use, he may then be furnished with other criteria and may be asked to state whether or not it was upon such bases that he made his judgments. This procedure is known as the method of *confrontation*, and consists in nothing more than an effort to determine, by questioning the observer after a report is made, just what was meant by the terms of the report.

II. Accuracy of Report

The report of an observer, in the meaning intended by him, may still not accurately represent the consciousness described. Inaccuracies in the account may be either those of omission or those of commission; that is to say, the observer may omit in his report factors that were actually present in the consciousness described; or he may include factors that were not present; or he may combine the two in incorrectly describing a complex factor. Inaccuracies of either class may arise from intentional misrepresentation, unintentional error [suggestibility], or from the making of irrelevant statements for relevant [scatterbrainedness, retardation, and perseveration].

1. *Intentional misrepresentation* may occur with unwilling subjects, with some insane, and, less frequently, with any observer. Simulation is common in some insanities, especially in hysteria. The Ganser symptom (if the incorrect statements which constitute it may be regarded as sometimes intentional) would also furnish instances under this rubric. Intentional misrepresentation is likely to occur with any subject under emotional conditions, as, for example, when the pride of the observer is involved. The novice in the laboratory may misrepresent when he feels that his report may reflect his ignorance, although such misstatements are generally unintentional. The usual critical methods may be employed as safeguards against intentional misrepresentation. Four criteria, which are applicable, follow.

a. Knowledge of the *general tendencies* of the observer.

b. *Internal consistency* of the report. Misstatement may betray itself as well in the protocol as on the witness stand.

c. *Consistency of the description with regard to an average description of consciousness under the same conditions.*⁸ If the account of an unknown observer does not tally with the accounts of trained observers or of a large number of other observers who are consistent with one another, the reliability of his report may be questioned.

d. *Consistency with regard to other facts of psychology.* In psychology, as in any other science, reported facts that accord with the established facts of the science are more readily

⁸This criterion should be distinguished from the criterion for the interpretation of a report by reference to a standard consciousness [I, 2, above]. Here, if the reported pattern of the consciousness in question does not correspond with the pattern of the standard consciousness, the reliability of the report is questioned. In the previous case, the reported pattern corresponded to the pattern of the standard, and an unknown factor was interpreted by reference to the corresponding factor in the standard.

accepted than facts in disagreement with the general body of knowledge.

2. *Irrelevant statements* are often included in descriptive reports by some insane. There may be a general retardation of comprehension, so that a patient may not report upon one experience until he has had a second; or the patient may be unable to keep his attention fixed for a long time upon the topic of the report and thus, with a shift of attention, readily changes to an irrelevant topic. The extreme cases are non-sensical enough to be easily detected; but in other cases the irrelevant material is scarcely in itself distinguishable from the real description, by the side of which it may occur. Cases of material relevant to preceding consciousness, but not relevant to the immediate consciousness described, are common in reports from normal as well as from abnormal observers. There is a 'perseverative' tendency to report each consciousness in a series as of the same form as the last consciousness, so that the report of a change may lag behind the actual occurrence of the change. Remnants of preceding description may thus last over into subsequent descriptions after they have become irrelevant. Other cases of irrelevancy may arise where, for one reason or another, there has not been an acceptance of the *Aufgabe* to report. The degree of irrelevancy may be indicated by the four criteria already mentioned for intentional misrepresentation [*a*, *b*, *c*, *d*] and by another in addition [*e*].

e. Alteration of report to correspond with an alteration of experimental conditions or of questioning forms a very convenient check when irrelevant statements are suspected. The change in experimental conditions or in questioning amounts merely to the insertion of control experiments or of control questions. In extreme instances of perseveration or of retardation in the insane the meaning of the questions may be entirely altered, while the subject does not materially change the form of his reply.

3. *Unintentional error* occurs principally as the result of suggestion. In some cases of insanity, however, it may take the form of the unintentional misstatements of Ganser's symptom. Unintentional simulation is frequent enough to be regarded as a symptom of psychopathic inferiority. In both normal and abnormal cases, the error may be the direct result of some factor inherent in the mechanism of introspection, that is to say, in the way in which the descriptive report comes to be given. All the checks mentioned above [*a*, *b*, *c*, *d*, *e*] apply in this case as well as some others [*f*, *g*].

f. Spontaneity of report is regarded as one of the most important assurances that there is little inaccuracy due to suggestion. Reliability of report is indicated by spontaneity (1) when the information in the report is volunteered, (2) when the report is, at times, in the form of an answer that negates the implication of a question, or (3) when the verbal expression is not stereotyped.

g. Introspective report on the mechanism of description,—or at least an indication of the mechanism. If a description of the reporting consciousness is available, it will be possible to state whether the description reported attaches immediately to the processes described, or whether it attaches to representations of the processes, or whether, perhaps, it occurs automatically. When the description attaches to representative processes, inaccuracy may result from the failure of the surrogates to correspond exactly with the consciousness for which they stand. In the representation, some factors may be filled out, others may be but partially represented, others not represented at all. It may be that some of these incompletenesses and over-completenesses are intrinsic to the substitution of processes of one kind for those of another. Of the reliability of a report automatically given, even after a length of time, of the reliability of subjective certainty on the part of the observer in reporting, and of many other factors which enter into the process of description and affect the accuracy of the report, there is as yet very little known. An urgent need exists for experimental work in the investigation of the mechanism of the reporting consciousness.⁹

EXPERIMENTAL SERIES

I. Series with Cases of Dementia Precox

The reports studied are those given by eight subjects, diagnosed as cases of dementia precox, in a series of learning experiments, carried out with two pencil-mazes [M and N]. The work was performed in the psychological laboratory of the *Government Hospital for the Insane* in the summer of 1912. It is described and the reports of the patients are fully given elsewhere.¹⁰

II. Series with Trained Adults

It is obvious from the previous discussion that the critical examination of the introspections of abnormal subjects requires the establishment of a set of norms with which they

⁹ A study of this problem is at present projected in the Cornell Laboratory.

¹⁰ *Op. cit.*

may be compared. For this purpose, three observers, trained in introspection, were required to learn maze N, under the same conditions (as nearly as they could be duplicated) as the cases of dementia precox. The experiments were performed in the Cornell Laboratory in the fall of 1912 with the maze used for the patients. The observers were Dr. Day (*D*), graduate in psychology, Mr. Ruckmich (*R*), instructor in psychology, and Mr. Foster (*F*), research assistant in psychology. *D* and *F* were especially well trained in introspection. The observers were instructed to report "all processes relevant to the selection of the route." As a matter of fact they reported also upon other matter relevant to the total situation. It is not possible, in this article, to give the introspections even in partial detail. Summaries of the reports follow.

Observer D. 15 trials on 2 successive days. Maximal av. time, 1st day, 39.0 secs. Minimal av. time, 2nd day, 10.8 secs. Maximal single trial, exclusive of first trial, 1st day, 43 secs. Minimal single trial, 2nd day, 7 secs.

At the very beginning of learning the only prominent factors in consciousness were visual imagery and eye-kinesthesia, the visual imagery being of parts of the path, sometimes referring to the immediate position of *D*'s hand and sometimes being anticipatory. She oriented herself with reference to the center or to the edge of the maze by visual imagery. Reference to the outside was also carried for her by kinesthesia in the two arms (the observers were allowed to place the left hand at the outer edge of the maze while running the course with the right hand).

As early as the third trial, kinesthesia began to become more prominent and to displace visual imagery. Arm-kinesthesia, sometimes meaning the position of the hand and sometimes meaning the direction of the course, became frequent. Later, visual imagery and eye-kinesthesia occurred only at difficult parts, often furnishing then the cue to the course. At the end of the first day, *D* reported that the center was traversed entirely in kinesthetic terms, and that beyond the center the course ran smoothly, a visual image carrying the familiarity, until interrupted by a difficulty. After that the course was taken up by "an attitudinal cue, involving both kinesthesia and visual imagery," and continued smoothly to the end, with unclear kinesthetic cues only.

On the second day, visual imagery and eye-kinesthesia soon disappeared, the directive cues remaining in terms of arm-kinesthesia. Later the kinesthesia began to become "fused together into long swings," and continued until the whole consciousness had become a single kinesthetic "swing," with fleeting attitudes occurring during its course. Organic sensations of respiration carried the *Aufgabe* to get out quickly. *D* thought that this stage was immediately preliminary to automatism.

Observer F. 38 trials on 4 days. Maximal av. time, 1st day, 204.6 secs. Minimal av. time, 4th day, 5.1 secs. Maximal single trial, 2nd day, 465 secs. Minimal single trial, 4th day, 4 secs.

At first *F* found very few "directive factors," most of the turns being made "without anticipatory imagery" and visual images having, "for the most part, only a general directive influence." Consciousness was principally composed of visual imagery and of kinesthetic and tactual sensations, referring to parts of the maze. Later the visual imagery occurred only at difficult points, notably at one point where the same mistake was made repeatedly; the kinesthetic sensations were more prominent, and the kinesthetic images acted as directive factors, that is to say, they were anticipatory to parts of the course. Visual imagery was also sometimes anticipatory.

By the end of the second day parts of the maze had become fused into "unitary, anticipatory, visual-kinesthetic complexes," with a meaning that *F* can indicate only by drawing a crooked line that traces approximately a bit of the course. On the third day, however, he reported, for the first time, that the whole course was run "within one conscious present." In it there was nothing but a fusion of kinesthetic and tactual sensations from arms, finger, and neck, with strains from the abdomen, which carried the *Aufgabe* (cf. *D*'s organic sensations of respiration). On the fourth day, the experience took definitely the attitudinal form. It was an unitary fusion of kinesthetic and tactual sensations, meaning the hand and the pencil; strain images from the two arms and the hip, meaning effort to get the hands together (a position which occurs near the finish of the course); kinesis from eye-movement, meaning the position of the hand (*F* thought that his eyes followed his hand); and a background of strains from the abdomen and chest, carrying the *Aufgabe* to hurry through. Visual imagery sometimes occurred with this attitude, but seems to have had very little directive significance, and was more often lacking or very scant.

At this stage *F* found the foreperiod important. In it he lived through in hasty imaginal form the whole experience of the course in more detail than he actually experienced it later. He described it as "the whole maze in a nutshell." It constituted a preparatory set for him, and, when its course was interfered with, the smooth attitude of the subsequent period was broken up.

Observer R. 38 trials on 4 days. Maximal av. time, 1st day, 35.9 secs. Minimal av. time, 4th day, 6.0 secs. Maximal single trial, exclusive of first trial, 1st day, 51 secs. Minimal single trial, 4th day, 4 secs.

The reports of *R* are more meager than those of *D* and *F* and it is more difficult to generalize from them. On the first day, there were no processes reported relevant to guidance. The procedure seemed to be largely one of trial and error. On the second day, kinesis was once reported as directive, and, on the third day, kinesis and visual imagery were each reported once as directive. A great deal of visual imagery and kinesthetic sensation occurred regularly throughout the course, but *R* could not say whether they helped him or confused him in the running. The kinesis often meant, not guidance, but perplexity, and was sometimes reported as meaningless. Once auditory sensations from the movement of the pencil were reported as meaning the situation and also as anticipatory to the end.

On the final day *R* continued to report visual imagery and kinesis, irrelevant to guidance within the maze. He stated that he found no cues at all, that consciousness seemed "to run on a lower level of attention," and that there was a "feeling" which he could not de-

scribe, that he was "perfectly independent of the movement," that he could "perform a complicated problem while running the course." From this state of affairs, he inferred that the movement had become automatic.

The reports of *D* and *F* are remarkably alike. Consciousness at the beginning of the series is very complex and broken up, visual imagery and kinesthesia being prominent. As the maze is learned, these processes assume an anticipatory function, apparently determining the course. The visual imagery gives place to kinesthesia, but recurs frequently in the most difficult portions of the route. The kinesthesia fuses together, at first for small unitary parts of the course, and later for the whole course, forming in the final stage a unitary complex, of attitudinal form, of which the core is kinesthesia, but in which visual imagery may still appear. The report of *R* is very similar as regards conscious content, although it differs in the meaning ascribed to the processes. His account of the "automatic" consciousness accords fairly well with the description of the "attitudinal" complex by *D* and *F*.

The accounts by the three observers agree with the introspections of the observers in the large "human maze," used for the study of consciousness in maze-learning by Day and the writer.¹¹ Here visual and verbal processes were replaced by kinesthetic, meaning the direction of turning, and the kinesthesia later lapsed into automatism.¹² The "automatism" is like that "inferred" by *R*, that is to say, it is a unitary consciousness at a low level of attention in which there is not a separate reference to the individual parts of the maze. The experience was described by one observer in the large maze as a "careening through," a phrase similar to *D*'s and *F*'s "kinesthetic swings." The support of the special introspections by those obtained with the large maze¹³ makes perfectly safe the acceptance of the average account, based on the former, as a standard of comparison for the accounts of the subjects with dementia precox.

III. Series with Untrained Boys

In the study of the introspections of a class of insane patients it is natural to ask to what extent the character of the reports is due to the abnormality of the subjects and to what extent it is due to their lack of training. The question can be answered, if we establish standards of comparison with normal subjects of the same degree of training as the patients. The cases of dementia precox considered in this article were all

¹¹ This work is as yet unpublished. A preliminary account appears under *The Use of the Maze in Comparative Psychology*, *Psych. Bull.*, 9, 1912, 60.

¹² It may be thought that Day's familiarity with the typical maze-consciousness influenced her report in the learning of the pencil-maze. That this was not the case is indicated by the fact that, in her introspections on the pencil-maze, she does not report "automatism," as might have been expected, but describes a conscious attitude as a state new to her in this experience.

¹³ In this work there were fourteen observers, some of whom were especially well trained in introspection. The latter included Professor Bentley and Drs. Geissler and Jacobson.

uneducated men with very poor vocabularies (with the possible exception of G). Naturally they knew nothing whatever of a psychological terminology. It was thought that their general education and command of words were about those of a twelve year old boy. Accordingly, for purposes of comparison, two boys were employed in the Cornell Laboratory to learn the maze and to give reports upon the experience of learning. One boy, X, was eleven years old, very alert and active, and easily interested in the work. The casual observer would characterize him as "bright." The other boy, Y, was thirteen years of age, slow in both movement and comprehension, and apparently less intelligent than X. The experimental series were conducted exactly as for the insane patients, and the questioning was of the same nature. As space does not permit a detailed account, we content ourselves with summaries of the reports.

Observer X. 98 trials on 10 successive days. Maximal av. time, 1st day, 167.9 secs. Minimal av. time, 5th day, 5.0 secs. Average time on last day, 6.4 secs. Maximal single trial, exclusive of first trial, 2nd day, 56 secs. Minimal single trial, 5th, 6th, and 10th days, 3 secs.

In the first three days, X frequently reported "seeing the maze in my mind," and later he said that it was as if it were "painted" or "carved" in his mind. He insisted that it was "seeing it in my mind" that enabled him to find the way, although it was suggested that other things might help. He also reported, "I have a feeling in my pencil the way it goes," but insisted that this feeling did not help him. We may presume, then, that he experienced kinesthetic sensations, meaning the maze, or the situation, or the position of his hand, and visual imagery, meaning the way to get out.

On the fourth day he reported: "I just feel the motion of my hand. . . . My pencil runs like a street-car on a track;" "my hand goes right through as if there were little wheels on it;" but he also said: "It just seems as if somebody were holding that same maze before my eyes, as if I were doing it without a curtain. Funny." He appeared to have set himself the *Aufgabe* to visualize; he was very eager to reduce his time and constantly wondered "how it looked." When asked later, however, if he could "do it without seeing it," he replied, "I'm quite sure I could. I guess I could get the motion of my hand as easy as I could see it in my head." His procedure on making a mistake suggested that kinesthesia was the guiding cue, for he would pause after a rapid correct movement, move back and forth hesitatingly, and then finally shoot off rapidly in the right direction, very much as the pianist, when playing from memory, stumbles through a difficult passage and then catches the swing of the movement again.

On the seventh day, he found that he could no longer increase his speed, and consequently lost his keen interest in the problem. With interest the *Aufgabe* to visualize seemed to lapse, for only very infrequently did he now report "seeing the maze." Often he insisted that he did not "see the maze," and he stated time after time, "Felt

the motion of my hand. That's all." His behavior had become typically motor, and frequently, like the piano player, when checked in a difficult place, he would get past by going back and taking a "running start," which would carry him by.

On the eighth day, he once reported that he "thought of nothing" while going through, and, on the tenth day, we find this condition frequent. Only when he "got caught" did he "feel the motion of his hand." Apparently this stage corresponds to the "automatic" or "attitudinal" consciousness, reported by the trained observers.

Observer Y. 100 trials on 9 successive days. Maximal av. time, 1st day, 41.7 secs. Minimal av. time, 8th day, 7.0 secs. Av. time on last day, 7.6 secs. Maximal single trial, 2nd day, 109 secs. Minimal single trial, 8th day, 6 secs.

At first *Y* was unable to comprehend the meaning of the questions asked. His reports suggested verbal imagery, but were very indefinite. On the second day, however, he noted an orienting cue in the fact that his hand "felt different" when it was near the edge. Later he said, "When my two hands get near together, I can kind of feel it in them,"—the kinesthetic cue mentioned by *D* and *F*.

At the end of the third day, *Y* suddenly reduced his time in a trial in which he changed his whole bodily attitude, so that, instead of gazing off vacantly to one side, he fixated the curtain steadily. He reported: "Usually I just kind of look off and go through; but this time I looked hard at the curtain and tried right hard." Later he said: "There is a kind of picture of the maze,—part of it. I can't tell all the parts of it;" "I can't see the color of the board and all that. I can just kind of see the path part of it." Thus the presence of visual imagery seems assured.

Of the parts for which he reports no visual imagery, he said: "I can just tell by the way my hand goes;" "one place I can't see the maze, but I know from the way my hand goes that I'm getting near the place where I get out." The form of expression in this case, as well as in the others quoted, was unsuggested to *Y*, although resembling closely the words of *X* and of the demented.

On the last three days, *Y* continued to indicate both visual imagery and kinesthesia, although he is given during this time 42 of the 100 trials, in order to allow the habit to become entirely motor, if possible. He evidently found the work monotonous, for his answers appeared stupid and his phraseology stereotyped and parrot-like. He worked uninterestedly, gazing off to one side. He was unable to draw the route, although he reported that he "could see it in his mind." His indefinite fixation and his inability to draw suggest that visual imagery was perhaps less and kinesthesia more important than his indefinite reports would indicate.

CRITIQUE OF THE REPORTS

Let us now proceed to a critical examination of the introspective reports made by the eight cases of dementia precox. As we cannot reprint them here, we shall refer to them as explicitly as possible.

It would not be fair to seek for evidence of reliability or of unreliability in the reports of all the subjects taken in a mass. Altogether enough positive or negative instances might

be found to establish their reliability or to overthrow it, while the proof might not be at all conclusive in any one of the individual cases. We must begin by measuring the report of each subject by reference to the criteria we have already established, and then see what our net result has been. We shall make the separate surveys as brief as possible, referring in each case to five factors of reliability,—a modification of our original schema, which we shall discuss later.

Subject A.

Intelligibility. A uses such phrases as "I can tell by the touch of the pencil," or "I get out by just following the pencil" for kinethesis, if the empathic interpretation be accepted. "I just came to have the right feeling for the passage; I can't explain it," coming at the end of a series, may be taken to stand for the conscious (kinesthetic) attitude reported by the normal observers.

Misrepresentation. No tendency toward dishonesty was noted. The internal consistency is good, there being only one contradiction of statement, and that one influenced by suggestion. The report—as much of it as is interpretable—is consistent with the average consciousness.

Irrelevancy. No tendency to talk "off the point" was ever observed. The report is consistent. For these reasons there was no attempt to vary conditions in order to note the effect on the report.

Suggestibility. A was ordinarily very suggestible. He showed a tendency to answer all possible questions by "Yes, sir" or "No, sir," according to their implication. He did not "resist suggestion" in the Binet test with lines. On the other hand, when the questions required considerable thought before answering, he would as frequently negate the implication of the question as agree with it. Once, in answer to suggestive questions, he apparently contradicted himself. At all other times the report is consistent with itself and with the average course of consciousness. In the latter connection, the indefinite verbal expressions coming at a time when the attitudinal consciousness might be expected, are worthy of note. A here reports: "I just came to have the right feeling for the passage;" "I just kept feeling for the doors, but I can't explain how it was;" "I don't know how to explain it. It was just the feeling for the gates and thinking how it must be,—from practice." The phrases already noted illustrate the spontaneity of expression. None of these phrases, apparently, was suggested.

Completeness. A was not at all communicative and had to be constantly urged to reply to questions fully. There is no internal evidence that his reports were not complete, but comparison with the detailed protocols of the trained observers shows them to be very meager. A does not indicate spontaneously that he is giving an account of the entire experience.

Subject B.

Intelligibility. B used the terms "general opinion" and "general imagination" very indefinitely, but later identified them as "like look-

ing at a picture in the dark, when you can about half see it" and as "something like looking at a map." Later he denied having a "general opinion of it," and stated that he "just knew how to go," that he "had it in his mind," and that "somehow when I get in the passages it just seems as if I knew how to go." In terms of the average consciousness, these expressions must indicate kinesthesia, the last, perhaps, the semi-automatic movement.

Misrepresentation. B was inclined not to talk much, except about his troubles, and sometimes resented being plied with questions. Such answers as he gave, however, appeared to be sincere. He was not inconsistent with himself, and his sudden change of report from "general opinion" to "just knowing how to go" corresponds well with the change from visual to kinesthetic cues in the average consciousness.

Irrelevancy. While B frequently broke into his report to talk about his troubles, the line of demarcation between the two topics was always too distinct to permit the confusion of material. His report is internally consistent. A change of report, interpreted as a change from visual to kinesthetic cues, occurs in connection with the change in behavior to the typically kinesthetic form, indicating that the old form of expression did not last over after the experience it described had ceased,—that is to say, B did not make the "perseverative" error.

Suggestibility. B would stick to a point in spite of mild suggestive questions to the contrary. His report is consistent with itself and with the average consciousness. His expressions, as a rule, are not original, although they sometimes pass beyond triteness. Note, for example, the phrases quoted above for visual imagery.

Completeness. B was verbose about his troubles only. His replies to questions were very meager. Compared with the average account, he indicated only the three main phases of the course of consciousness.

Subject C.

Intelligibility. With maze M, C reports doubtfully, "I sort of see what it looks like," adding at one time, "Of course, I don't see it; I imagine it." He is, however, uncertain, and his report is not very intelligible. With maze N, however, he notes, "Seems like you just keep your pencil going like," and later, "I just sort of feel with my hand where the next door is going to be,"—phrases which one may take to mean kinesthesia. Such an interpretation is justified by his later usage: "Only when my hand stops going, then I think of it [the maze]. It doesn't pay to stop. . . . The stopping mixes me up;" "sometimes, when I go wrong, I think more about it;" "I don't think about anything" (while going through),—a positive assertion. These three expressions evidently refer to the smooth course of the habituated kinesthetic consciousness, the heightening of consciousness when the course is interrupted, and the final, low-level, attitudinal stage, respectively.

Misrepresentation. C was very sensitive and confiding, and appeared to try genuinely hard to do everything that he was asked to do. There were no gross inconsistencies in his reports, and his accounts, as indicated above, tallied in many respects with the average account.

Irrelevancy. C always made it possible to distinguish between relevant and irrelevant remarks, although he showed a tendency to introduce the latter. When the form of questioning was changed, he al-

ways responded to the altered meaning. His reports were, on the whole, consistent.

Suggestibility. He showed a tendency to agree with the experimenter in conversation, although this tendency did not appear very prominently in the reports. Once he contradicted himself, apparently as the result of suggestive questioning, and then, observing his mistake, modified it to make it partially consistent. In the first paragraph above, we have already partially noted to what extent his account tallies with the normal. There should also be mentioned his observation of the fact that the first part of the course was oriented with reference to the center,—a fact brought out by the normal observers. The quotations already given show a fair degree of spontaneity of expression.

Completeness. C, although bashful, talked freely when his confidence was gained, and gave thus a much fuller report than the two subjects already considered. He noted, as has been seen, a fair number of points observed by the trained observers.

Subject D.

Intelligibility. D was very indefinite. It was not easy to say what he meant by "knowing how to go" and by "putting his mind on it," or whether he had any visual imagery. His "kind of indefinite feeling" of how to go may be taken to be kinesthesia,— emphatically interpreted; and his later report, from comparison with the reports of the trained observers, is certainly kinesthesia: "That maze, there's a kind of give to it,—a kind of give where the openings are. I remember the way it gives, the way it feels when you push against the openings." Once he states that he got out "by the sound of the pencil.... There was a sort of indefinite rhythm about it. It played a tune,"—a description much like that of R.

Misrepresentation. D showed no tendency toward intentional misrepresentation, his inconsistencies being more readily explained upon another basis.

Irrelevancy. He exhibited a very baffling tendency to introduce irrelevant material into his answers without any warning. Many parts of his reports were discarded, because it was not possible to determine whether he was answering the questions or talking nonsense. The following excerpt from the notes of the experiment will illustrate the point: "Q. How did you remember how to get out? A. By the feel. Q. What do you mean by the feel? A. The way my hands feel and the way my eyes feel. Q. Do you often have a feeling in your eyes? A. Yes, they go round and round, like snakes. Q. How do you mean? A. Like snakes in a tobacco bag. I think there's gun-powder in them." And so on. At first it appears as if D were reporting a kinesthetic cue. Next one suspects eye-kinesthesia. And then it develops that he is talking without reference to the questions, although it is not possible to say just when the nonsense began and the sense ended. This tendency was very disconcerting, and makes one always uncertain of the value of his reports. It was necessary constantly to change the sense of the questions, in order to see if his answer changed accordingly. He did not, however, fall into this trap very frequently. The full record of D's work (not the published summary) contains many inconsistencies, quite evidently due to his persistence in bringing in irrelevant material.

Suggestibility. D was slightly negativistic, but the trait was not evident in his answers. There was no evidence of positive suggestibility. As much of his report as is safely interpretable is consistent, and accords with the standard account. He shows very little originality of expression except in his account of the "give" to the maze, quoted above.

Completeness. D was frequently subject to spells of mutism, and, except on one or two occasions, never talked freely. His reports, compared with the standard, must be judged very incomplete.

Subject E.

Intelligibility. E was able to explain his terms fairly explicitly. He distinguished between "memory," which is a visual image of the whole maze ("the looks of the maze with the wrong ways to go in it too"), "forming it in the mind," which is the visual imagery of the part immediately concerned ("the way it looks to go right;" without "the wrong ways to go in it"), and the "feel," which is kinesthesia. He described the "feel" and the "looks" quite thoroughly, so that there is little doubt of the empathic interpretation. This fact is particularly striking, because his consciousness did not follow the average course, but remained persistently visual. If E's account had not been especially clear, it would not have been possible to determine this fact with certainty.

Misrepresentation. E coöperated heartily in the work throughout and gave every evidence of sincerity. His report is full and internally consistent, although it departs to some extent from the average course of consciousness.

Irrelevancy. E's answers were always pertinent. He showed no tendency to talk nonsense. At one time, he reported, first, visual cues, then a conscious decision to rely upon motor guides, and finally a return to visual guidance, in successive reports, so close together, that there would seem to be little 'perseverative' tendency for the expression in one report to lag over into the next.

Suggestibility. No tendency toward suggestibility was manifest. The reports were internally consistent. The inconsistency with the average consciousness has already been mentioned. E's descriptions are, however, so explicit, for an untrained subject, that they can be taken as forming a clear exception to the normal course. Moreover, it is not to be said that E would not have formed a purely kinesthetic habit had the series been prolonged. His persistent visual imagery, at any rate, may have been due to his keen interest in the task and his effort to reduce his time,—an occurrence that happened in the case of observer X (*cf.* p. 158). The spontaneity of his replies is especially marked. Many of them, including those quoted in the first paragraph above, were volunteered, and not given in response to questioning. Besides the points noted, he reports, without suggestive questioning, kinesthetic cues for limiting arm movement ("I felt I was moving my hand too far"), anticipatory kinesthesia on passing through a door, and an anticipation of the movement in the foreperiod ("you have to get the movements formed in your mind before you start out;" *cf.* the foreperiod of the normal observer, F, "the whole maze in a nutshell," p. 156).

Completeness. E was free and very talkative. The explicitness of his reports has already been indicated.

Subject F.

Intelligibility. F spoke of "feeling the way" and later, when he was lost, of "going back for a fresh start." His procedure was typically motor, that is to say, he got rapidly over a part of the course, stumbled about, picked up his cue, and then went rapidly over the next part. Sometimes he would go back a little way and get a running start, which would take him past the difficult place. As this performance is a condition for kinesthesia, we may interpret his expression accordingly. There was no hint of visual imagery.

Misrepresentation. F ordinarily seemed to be truthful and sincere. His report is scarcely explicit enough to be internally inconsistent. It does indicate the form of consciousness that would be expected from the behavior.

Irrelevancy. F was, in general, careless, both in manner and in form of expression. He showed a slight tendency to answer questions irrelevantly, but, although he shifted easily to disconnected topics, there was generally a change in attitude, that protected his interpreter from error. When the form of the questions was changed, he was always sensible to the difference.

Suggestibility. He did not appear especially suggestible in ordinary conversation. He did not, on the other hand, exhibit very much originality of expression. He did observe the necessity of going rapidly and not "thinking much" about the task, facts which support his statement that he "goes by the feel;" and at the end he noted that "it takes just one whole draw" to get out,—the kinesthetic attitude of the normal observers *D* and *F*.

Completeness. F talked incessantly, but did not keep his attention readily upon the maze problem. His lack of interest in the introspective side of the problem partially accounts for the lack of detail in the report.

Subject G.

Intelligibility. G insisted: "I see it in my mind,"—visual imagery. His references were made explicit by describing the turns "seen," as a fire-place with a mantel, as a street, as a casaban effect on a curtain, and so forth. Later he reported being guided in part by the "sense of feel" or "touch," which he opposed to the "sense of thought," the latter possibly meaning visual imagery or perhaps merely a heightened consciousness. He said: "It brings the two senses together, the sense of feel and the sense of thought. . . . There are a number of places where I'm uncertain; then the thought comes in. The sense of feel is when I'm all right." In terms of the average consciousness, then, the "sense of thought" is a heightened consciousness and probably a visual one.

Misrepresentation. G was seemingly perfectly honest, and his reports are consistent with themselves and with the average course throughout.

Irrelevancy. Very occasionally G may be suspected of having introduced irrelevant material into his answers, but the proof is not positive. He always replied pertinently to questions. His reports were uniformly consistent.

Suggestibility. G was not evidently suggestible. His reports showed unusual originality of expression. The comparisons quoted in the paragraph above and many others of like nature were made spontaneously.

Completeness. G was a fluent and persistent talker. If he could have devoted all his remarks to a description of conscious processes his reports would have been full indeed. As it is, they give only the general outline of the conscious course.

Subject H. (Series cut short; less practice than other subjects.)

Intelligibility. H reports, "I follow the pencil," "I go with the pencil," "I just feel my hand go through,"—expressions which may be emphatically interpreted as kinesthesia. Nothing else in the protocols is positive. The indefinite indications of visual imagery are possibly the result of suggestive questioning.

Misrepresentation. H appeared to be honest about all matters except his delusions. His report is too meager to give opportunity for measurement on the basis of internal consistency, although there is one contradiction, which seems to be the result of suggestion. As far as it goes, it is in accord with the normal course.

Irrelevancy. There is no especial reason to suspect irrelevant material in the reports.

Suggestibility. H appeared in ordinary conversation to be very suggestible, that is to say, he was very sensitive to the meaning of everything that was said to him. Once, when asked if he "saw the maze in imagination," he replied that he did, but his later reports throw doubt on the presence of visual imagery. Still the proof is not conclusive. At no other time does he contradict himself. His expression shows no more originality than is indicated by the quotations already made.

Completeness. He was taciturn about everything except his troubles, and toward the end of the series resented being asked too many questions. At best he indicated only the general character of his consciousness.

It is now our task to bring together the loose ends of our criticism, to generalize so far as generalization is permissible. We can best do this by means of a table, in which rough scores show approximately the various degrees of reliability indicated by each criterion. Nothing but the crudest sort of quantification is intended, and even that represents nothing more than the personal estimate of the writer.

The captions of the table, it will be noticed, do not correspond exactly with those given in the discussion of the criteria of reliability above. The change is a simplification, resulting from the omission of the possible criteria that could not be determined, or were not applicable, in the present cases. The criterion of "consistency with regard to other facts of psychology" is omitted throughout, because it applies to generalizations of a larger scope than any undertaken in the present study. The "mechanism of description" as a criterion of reliability is not considered, because no accounts of the means of

reporting were taken with the insane patients,¹⁴ and because too little is known of the relation of the mechanism of reporting to the accuracy of the report. With this factor omitted, the only sort of unintentional errors that concern us we may group under the general head of "suggestibility." The degree of "completeness" should properly be indicated by all the criteria listed under "intentional misrepresentation," "irrelevancy," and "unintentional error," for the errors of omission are coördinate with those of commission; but for all practical purposes in very crude reports, such as we have to consider, completeness is indicated only by the general tendency of the subject to talk freely of his experiences and by a comparison with the standard consciousness. The latter is by far the more important.

The method of scoring adopted in the table is to indicate by "1" the very greatest, and by "5" the very least, degree of reliability. The intermediate degrees are represented by "2," "3," and "4," thus throwing all measures of reliability into a rough five-fold classification. An average (in italics) is shown for each of the main factors. It is not an arithmetical mean, but an estimate based upon all the times available. It might be regarded as a weighted mean. It is obvious that one criterion, strongly indicating unreliability, may readily outweigh others, which fail to indicate unreliability, for the criterion may be selective for different types of error, and a single one may imply a high degree of unreliability of a certain kind. When a criterion is obviously to be disregarded in favor of other measures, the score is placed in parentheses. In such a case, the score bracketed is generally based on much more meager evidence than are the other scores.

We have also scored in the table, for purposes of comparison, the reports of the untrained boys and of the trained observers. Lack of space forbids a separate discussion of these reports, but a review of the summaries given and a comparison with the protocols of the patients should convince the reader that they are approximately correct.

The bold-faced type shows the averages for the different classes of observers.

¹⁴It is not impossible that some indication of the reporting procedure might be got from untrained observers. An attempt to bring out information on this point with the boy X, indicated that his reported description in general attached immediately to imaginal revivals of the processes in the original consciousness, or at least to representative processes from the same sense-department. When asked, for example, how he was sure that he had both seen and felt his way, he replied, without further suggestion, "Because I still see it, only it's fainter; and I feel it still, only I don't feel it very much." On the other hand, Y, after being given a special series with a view to determining his mode of reporting, was unable to make any satisfactory replies at all. It may be that trained observers differ in the ease with which they assume the introspective attitude toward certain experiences. Both D and F, who, however, had had training along these lines before, found no difficulty in describing the reporting consciousness; on the other hand, the description was difficult for R, who found that the double *Aufgabe*, to report and to report on the reporting, was distracting.

INDICATED RELIABILITY OF REPORTS

Under each factor of reliability are placed the criteria which indicate reliability for that factor. Indicated reliabilities for each criterion are scored from 1 to 5, 1 being the greatest, and 5 the least, reliability. The average score for each factor is given in italics. It is not the arithmetical mean, but an estimated classification based on the relative values of the different criteria. Numbers in parentheses signify that the criterion so marked is for other reasons discounted as an indicator of the reliability of that particular factor.

Factors of Reliability	As indicated by:	OBSERVERS															
		Dementia Precox									Untrained Boys			Trained Adults			
		A	B	C	D	E	F	G	H	Av.	X	Y	Av.	D	F	R	Av.
INTELLIGIBILITY																	
	Empathic interpretation	3	4	3	5	1	3	2	3		2	3		1	1	1	
	Reference to a standard consciousness	3	2	2	5	2	3	3	4		2	3		1	1	1	
	Standardized terminology	—	—	—	—	—	—	—	—		—	—		1	1	1	
	<i>Average intelligibility:</i>	3	3	3	5	2	3	2	3	3.0	2	3	2.5	1	1	1	1.0
ACCURACY																	
MISREPRESENTATION																	
	General tendencies (truthfulness) of observer	1	1	1	1	1	1	1	1		1	1		1	1	1	
	Internal consistency of report	2	1	1	?	1	?	1	?		1	1		1	1	1	
	Consistency with regard to an average description	1	1	1	?	(3)	2	1	2	1.0	1	1	1.0	1	1	1	1.0
	<i>Average misrepresentation:</i>	1	1	1	1	1	1	1	1		1	1		1	1	1	
IRRELEVANCY																	
	General tendencies ('perseverative' retardative, etc.)	1	2	1	5	1	2	2	1		1	2		1	1	1	
	Internal consistency of report	1	1	1	4	1	?	1	?		1	1		1	1	1	
	Consistency with regard to an average description	1	1	1	3	(3)	2	1	2		?	1		1	1	1	
	Change of report with a change of conditions	?	1	1	4	1	2	1	1	1.5	1	1	1.0	—	—	—	1.0
	<i>Average relevancy:</i>	1	1	1	4	1	2	1	1		1	1		1	1	1	
SUGGESTIBILITY																	
	General suggestibility of observer	3	1	2	1	1	1	1	1		1	2		1	1	1	
	Internal consistency of report	2	1	2	?	1	2	1	?		1	1		1	1	1	
	Consistency with regard to an average description	1	1	1	3	(3)	2	1	2		1	1		1	1	1	
	Change of report with a change of conditions	?	1	—	?	1	—	—	—		1	1		1	1	1	
	Spontaneity of report	3	3	3	5	1	4	1	1		3	3		1	1	1	
	<i>Average suggestibility:</i>	2	2	2	4	1	3	1	2	2.1	2	3	2.0	1	1	1	1.0
COMPLETENESS																	
	General tendencies of observer	5	5	4	5	(1)	4	(1)	4		4	5		1	1	1	
	Internal consistency of report	5	5	4	5	3	4	4	5		3	4		1	1	2	
	Consistency with regard to an average description	5	5	4	5	3	4	4	5	4.4	3	4	3.5	1	1	2	1.3
	<i>Average completeness:</i>	5	5	4	5	3	4	4	5		3	4		1	1	2	

Referring to the table and recalling the citations which we have made from the protocols, we find, as we should naturally expect, that the reports of the demented suffer most in incompleteness. There is a considerable difference between subject E, who coöperates heartily and gives a clear, explicit account of all that he can recall, and subject D, whose answers are very indefinite and fragmentary; but even the report of E is much less detailed than those of the trained introspectors. The other patients, besides E, give, as a rule, only the general character of the more prominent processes. It is impossible to get from them accounts of the more subtle means of orientation, of the exact course of conscious events while the maze is being run, or even of the exact character of the experiences which they do indicate or mention. One has only to read the introspections of the trained observers to realize how schematic is the account furnished, even after much patient questioning, by these untrained subjects. On the other hand, one should never lose sight of the fact that something of attested reliability is obtained, and that, for some purposes, that something is all that is required.

Next to completeness the reports are most deficient in respect to intelligibility. It is hard to interpret them with the explicitness that is often desired. We tend empathically to interpret such phrases as "I see it in my mind" or "I just felt as if my hand were being moved" as visual imagery or kinesthesia. If the phrases are varied or supplemented by others of like nature, we become more positive. If they appear in accordance with an already established course of consciousness, we are reasonably assured of their meaning. On expressions of this sort the entire interpretation in the cases considered has had to be based. The demented had, of course, no command of a standardized terminology, and there was no time to train them in the meaning of any particular terms, although there is no apparent reason why they could not have been so trained.

The chief source of error in the interpretable items reported is that which we have called suggestibility. Three subjects showed a general tendency to reply according to the implication of the question. Three indicated suggestibility by conflicting statements in the reports. All, except E and G, more or less lacked the spontaneity of expression, which may be taken to indicate freedom from suggestion. D and F were especially poor in this respect.

There was some tendency—a tendency which might be expected in cases of dementia precox—to make statements,

while reporting, entirely irrelevant to the questions asked or to the whole situation. Frequently the statements have a bearing on the delusional troubles of the patient, but this is not always the case. The confusion results, doubtless, from the inability of the subject to keep his attention concentrated upon a single extraneous topic for any considerable period,—a deficiency characteristic of dementia precox. With some subjects, however, the shift of attention is so marked, by a change in bodily attitude, that there is no danger of confusing the pertinent with the irrelevant material. With others, who talk freely, the meaning of the remarks is sufficient to protect the experimenter from error. With a subject, however, who answers only in monosyllables or short phrases, as did subject D, the shifts of attention are not obvious, as the instance quoted above clearly shows (p. 162), and the danger of error is large. D is the only subject in whom this tendency to report irrelevant material throws serious doubt on the reliability of the protocols.

No evidence at all of intentional misrepresentation was found in the insane subjects tested. An investigator might not, of course, always be so fortunate. The patients were not always truthful when in the wards. The experimenter, however, made an especial effort to secure their confidence and to treat them sympathetically, and it may be that his attitude determined their behavior.

The writer was struck, when performing the experiments with the untrained boys, with a great similarity between the reports of the boys and the reports of the cases of dementia precox. The type of questions required, the form of the answers, the phraseology, the amount of material reported, all seemed to be very much alike in the two cases. We now see that according to our system of scoring, the indicated reliability of the records of the demented is only a little less than that of the normal boys. The patients were considerably less complete in their reports than the boys; but they were only slightly less intelligible. They were somewhat more given to irrelevant statement, but they were practically no more suggestible. All observers, normal and abnormal, were scored in the highest class for honesty. The patients, in fact, rank so little below the boys, that individual patients rank higher than the average for the boys. Both E and G average, on the whole, higher than the average for the boys, E not ranking below them in a single item. C is just equal in reliability to Y, the poorer of the two boys. If subject D had been excluded, the record of the patients would have approximately equalled that of the

boys in everything but completeness. D is responsible for almost all the deficiency indicated under the rubric "Irrelevance," a deficiency which is, however, undoubtedly an immediate result of mental disorder. The differences in intelligibility and in completeness of reports between the demented and the untrained normal subjects seem to be nothing more than one which results from a poorer command of verbal expression by the patients, coupled with an inability to observe, or at least to describe, details,—a condition that we might find in any untrained observer with a poor command of language.

CONCLUSIONS

1. Persons with dementia precox can, under experimental conditions and without prolonged special training, give reports indicating the general trend of consciousness.

2. The phraseology of the reports is simple and naïve, and its interpretation depends upon an empathic understanding of certain forms of expression or upon a knowledge of the facts of the average consciousness under the conditions of the experiment.

3. The reports are very incomplete as compared with the reports of trained normal observers, but they indicate reliably the general character of the contents of consciousness, and may in some cases include implications of special and less prominent processes.

4. The demented are more suggestible than trained observers.

5. There were no indications of intentional misrepresentation in the reports of the patients experimented upon.

6. Some of the reports are rendered unreliable by the tendency of the subject to make no distinction, apparent to the experimenter, between statements that are relevant and statements that are irrelevant to the situation or to the questions asked. This confusion may arise from the state of constantly shifting attention, characteristic of dementia precox, which arises when a subject is required to attend to a situation foreign to his usual course of ideas.

7. There is great individual variation between the demented in the factors indicating the reliability of the reports.

8. The reports are, on the whole, of about that degree of reliability that is found in reports made by untrained observers with little education and a poor command of language, and appear to differ from these reports in no characteristic way other than in the introduction of irrelevant material.